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# The Department of BIOLOGY

Summer 2013



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## **"The Times They Are A-Changin'" (Bob Dylan)**

By Dr. Bernd Fritzscht, Departmental Executive Officer (DEO)  
and Professor



This song title is an appropriate placeholder for the status of the Department of Biology. It is now exactly five years ago that I started my term as Departmental Executive Officer (DEO). This is a good time to look back in order to create the perspective we need to move forward. The department has changed in these five years and nowhere is this more obvious than with the retirement of Joe Frankel — after 50 years of service. Joe has been the glue holding the teaching of the department together.

Luckily, we have an outstanding successor, Bryant McAllister, as our new Associate Chair for Undergraduate Studies. Bryant, Brenda Leicht, Lori Adams, and others have already overseen dramatic changes in the undergraduate curriculum. These

changes will put the Department of Biology on track to be among the leading programs in the Midwest to implement evidence-based scientific teaching where students are actively engaged in understanding beyond the rehearsing of facts.

As with the undergraduate program, the graduate program has been completely overhauled. The new Associate Chair for Graduate Studies, Joshua Weiner, will oversee a whole new curriculum this fall. The changes that have been put into place will likely reduce the total amount of time to complete the Ph.D. degree by approximately a half-year. The entire department has been engaged to help change this program, but it is under Josh's leadership that the new I-Bio program is bound to become a success.

As we all know, the financial crisis of 2008 is not yet over and the current situation of extramural government funding (National Institutes of Health, National Science Foundation, NASA, etc.) is far from recovery. Therefore, it is very pleasing to see several young faculty receiving new extramural support, including hires who have been with us for only a short time.

On the topic of recent hires, last year's successful Genetics faculty position search has provided us with an outstanding new faculty member, Anna Malkova, who is engaged in yeast genetics. We hope that the new Neurobiology of Aging search in the coming months will find an excellent candidate in the area of age-related brain dysfunction. With a successful hire, we hope to improve our basic biological understanding of altered brain function, including age-related neurodegenerative diseases such as Alzheimer's, Huntington's, and Parkinson's.

I hope you enjoy reading more about some of the topics briefly mentioned above in this edition of the newsletter. Of particular interest to many of you will be the publication on the history of the Department of Biology compiled by Eugene Spaziani. As I reflect back on my five years and what the department has accomplished, I am looking forward with optimism for a great future — a future that will include continued improvement and move the department to an even higher level of excellence.

# Transforming the Biology Undergraduate Program

By Dr. Bryant McAllister, Associate Chair for Undergraduate Studies and Associate Professor



*Foundations of Biology students in a TILE classroom in the Biology Building*

A new introductory biology course sequence was phased in during the past academic year. Two courses, *Foundations of Biology* and *Diversity of Form and Function*, replaced the long-standing *Principles of Biology I & II* courses. These courses introduce Biology undergraduates and students in other life science majors to core principles, structures, and processes that function in living systems. Biology continues to be one of the more popular majors among incoming University of Iowa students. As a consequence of the high interest in the life sciences, more than 1,000 students started through this new curriculum over the past year.

Accommodating the large number of students interested in the introductory biology course sequence is one factor that led to the

curriculum change. Teaching space for wet labs in our current facilities is near capacity, so the *Foundations of Biology* laboratory alternates weekly between a wet lab and dry lab throughout the semester with sections of the course on shifted schedules. Support staff, teaching assistants, and students quickly adapted to the added complexity in the laboratory schedule. From an instructional perspective, the dry lab sessions are advantageous because activities performed during these class meetings support the course goal of integrating lab work with conceptual themes introduced in lecture. The planning and reflection that occur in the dry lab enable students to connect between the lecture content and the experiments performed for three laboratory projects conducted during the semester.

This past spring semester the dry lab for *Foundations of Biology* moved from a temporary home in the basement of the Biology Building to a remodeled classroom on the first floor. This classroom was renovated into a TILE format, which stands for Transform, Interact, Learn, and Engage, and is a model for a series of student-centered learning spaces at the University of Iowa. TILE classrooms have round tables, laptop computers, flat screen monitors, multiple projectors, and whiteboards with the instructor having the flexibility to control a variety of computer displays. The various display options within the collaborative learning environment of the TILE classroom facilitate group activities that build understanding of course materials through peer-to-peer interactions. By gaining skills in critical thinking directed toward active investigation of biological systems, students in the *Foundations of Biology* course are preparing for upper-level studies in Biology and beyond.

## New “I-Bio” Graduate Program to Launch this Fall

By Dr. Joshua Weiner, Associate Chair for Graduate Studies and Associate Professor



*New “I-Bio” Logo*

name change approved by the Board of Regents and have been busy implementing the changes we designed to improve both Ph.D. and M.S. (Master of Science) students’ experience in the program. In August 2013, we will matriculate our inaugural I-Bio class of seven students — five Ph.D. and two M.S.

Our new name reflects the uniqueness of our departmental program. Research in our department integrates: 1) multiple levels of analysis — from the molecular to the ecological; 2) multiple

organisms — from single-cells (yeast) to genetic and embryological model systems (flies, nematode worms, frogs, zebrafish, mice) to natural populations and their symbiotic relationships; and 3) multiple scales of biological time — from embryogenesis to aging to phylogenetics. No other graduate program on campus can offer incoming students such a broad range of research to explore.

I-Bio is more than just a name, however. We are implementing changes that will better train our graduate students for “a life in science.” Our aim is to produce well-rounded Ph.D. students who will not only excel in research, but who will also be our next generation of gifted teachers and enthusiastic communicators of science to the general public. The revised I-Bio program includes new courses, a seminar series, a richer teaching experience, and a focus on providing relevant career-building information to our students.

For more information about the new I-Bio program, please visit our website at [ibio.biology.uiowa.edu](http://ibio.biology.uiowa.edu)

To learn how gifts can make a difference for faculty and students in the Department of Biology, please visit [www.givetoioiwa.org/biology](http://www.givetoioiwa.org/biology) or contact Chris Wilson at the UI Foundation ([chris-wilson@uiowa.edu](mailto:chris-wilson@uiowa.edu); 319-467-3814).

## New Faculty Member

By Steve Kehoe, Editor



Anna Malkova will be joining the Department of Biology's faculty in January 2014 as an associate professor. Dr. Malkova completed her Bachelor of Science and Ph.D. degrees in Genetics from St. Petersburg State University in St. Petersburg, Russia. She has held positions of postdoctoral fellow and research associate at Brandeis University in Waltham/Boston, Massachusetts, and is currently an associate professor in the Department of Biology at IUPUI (Indiana University-Purdue University Indianapolis). She is also an adjunct associate professor in the Department of Medical and Molecular Genetics at the Indiana University School of Medicine and is a member of the American Society for Microbiology and Genetic Society of America.

Anna's research focuses on the mechanisms of DNA repair and recombination and, more specifically, studying the pathways that are employed by living cells to repair DNA breaks. Her current research seeks to understand the DNA repair pathway called break-induced replication (BIR), a mechanism that is useful for the cell as it allows for the repair of chromosome breaks. However, BIR is also dangerous as it can lead to genetic changes and chromosome abnormalities similar to those known to cause cancer in humans.

For more information about the Department of Biology's faculty, please visit our website at [www.biology.uiowa.edu](http://www.biology.uiowa.edu)

## Professor Frankel Retires with over 50 Years of Service

By Dr. Eugene Spaziani, Professor Emeritus



Professor Joseph (Joe) Frankel retired on June 30, 2013, after serving over 50 years in the Department of Biology. He is a noted scientist, but is at least as well known locally for his dedication to teaching. Joe could be described as the intellectual leader in the evolution of our undergraduate biology curriculum over his entire time here. His direct teaching mainly involved the beginning course sequence, which he taught

in conjunction with several other department faculty, mostly Professor Norman Williams and, more recently, Dr. Jeff Klahn. Joe insisted upon being conversant with all research fields represented in the department for more effective teaching in the introductory courses. In 2007, Joe received the Helen Kechriotis Nelson Teaching Award in special recognition of his career-long dedication to and excellence in teaching. He also co-authored six editions of, "Laboratory Manual in Principles of Animal Biology," followed by ten editions of, "Laboratory Manual in Principles of Biology II." From 1999-2012, Joe served as Director of Undergraduate Studies and Associate Chair of the Department of Biology.

Joe received his Bachelor of Science degree at Cornell University in 1956 and his Ph.D. degree from Yale University in 1960. Prior to his employment in the University of Iowa Department of Biology, Joe was a National Institutes of Health (NIH) postdoctoral fellow at the Biological Institute of the Carlsberg Foundation in Copenhagen, Denmark. While at the University of Iowa, he built a reputation as a thoughtful and influential scientist. Joe is a protozoologist specializing in the development and genetics of organelles and pattern formation in unicellular organisms. Working mostly with the ciliate, *Tetrahymena thermophila*, he intensely studied the development of ciliary organelles (especially the oral apparatus) and the causal mechanisms and timing of developmental sequences. This research was supported by the NIH and the National Science Foundation (NSF). He has been invited to speak in numerous international symposia in developmental cell biology and has served on the editorial boards of seven journals. In addition, he was elected a Fellow of the American Association for the Advancement of Science (AAAS) in 1984.

## Special Seminars on August 30th

The Department of Biology will be honoring and celebrating Joseph Frankel's retirement with two seminars on Friday, August 30, 2013. The first seminar, by Dr. Paul Doerder from Cleveland State University, will begin at 3:30pm followed by Dr. Eric Cole, St. Olaf College, starting at 4:30pm. The seminars will be held in Kollros Auditorium, Biology Building East, on the University of Iowa campus. For more information, please visit [www.biology.uiowa.edu/seminars.php](http://www.biology.uiowa.edu/seminars.php) or contact the Department of Biology (319-335-1050, [biology@uiowa.edu](mailto:biology@uiowa.edu)).

Individuals with disabilities are encouraged to attend all University of Iowa sponsored events. If you are a person with a disability who requires a reasonable accommodation in order to participate in this program, please contact the Biology office in advance at 319-335-1050.



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# The History of the Department of Biology

By Dr. Eugene Spaziani, Professor Emeritus

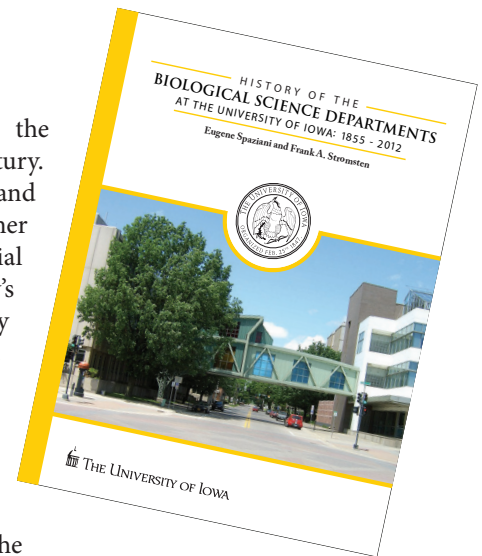
Departmental Executive Officer (DEO), Bernd Fritzsche, recently commissioned me to write about the history of the Department of Biology. The result is a book of 45,000 words in seven richly illustrated chapters, "History of the Biological Science Departments at the University of Iowa: 1855-2012," that should fascinate faculty, students, and alumni. The first part chronicles the exploits of our colorful and influential faculty (e.g. Samuel Calvin, Thomas Macbride) as they put biology at the University of Iowa on the map with pioneering studies in ecology and the founding of the Iowa Lakeside Lab. They also conducted extensive expeditions that included collections describing the natural history and geology of Iowa, the western U.S., and other areas of the world. Botany became a separate department under Macbride, whose expertise in mycology led to a department with an international reputation in that field. In the mid-1920s, the emphasis in the animal biology side abruptly shifted from natural history to experimental science. Led by Koch medalists Wilbur Swingle and Emil Witschi, then by National Academy of Sciences member, J.H. Bodine, who was succeeded by J.J. Kollros, a Department of Zoology emerged with a national reputation in developmental biology, endocrinology, fine structural biology, and genetics.

The book chronicles the enormous expansion of faculty, research space, teaching labs, and grant income under Kollros and his

successors through the turn of the 20th century. Meanwhile, Botany and Zoology came together again in a controversial merger to form today's integrated and highly productive department. New ventures in undergraduate and graduate teaching are described, in addition to team

research such as the pioneering Roy J. Carver Center for Genomics (CCG). An important emphasis of the book is the cultural and economic impacts of the department on the university, the community, and the state. Our influential history of faculty, student diversity, and community outreach are also detailed.

The book is expected to be available for purchase in Fall 2013. For more information, please contact the Department of Biology at 319-335-1050 or [biology@uiowa.edu](mailto:biology@uiowa.edu)



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